

# Graph Convolution Networks

Arka Sadhu

IIT Bombay

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# Outline

## 1 Graph Convolutional Networks

- Why GCN
- How to extend convolution to graphs?

## 2 Spatial Approach

# Introduction to Graph Convolutional Networks

- CNN are extremely efficient architectures for image and audio classification tasks.
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- Want to generalize CNN to Graphs.

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  - ▶ Spectral Networks and Deep Locally Connected Networks on Graphs.
  - ▶ Convolutional Neural Networks on Graphs with Fast Localized Spectral Filtering
  - ▶ Semi-Supervised Classification with Graph Convolutional Networks



# Direct extension of convolution



M. Niepert, M. Ahmed, and K. Kutzkov, “Learning convolutional neural networks for graphs,” *CoRR*, vol. abs/1605.05273, 2016.